

IMPORTANT:
Refer to www.extron.com for the complete user guide, installation instructions, and specifications before connecting the product to the power source.

StudioStation 100 • Setup Guide

The Extron StudioStation 100 Streaming Media Processor is a compact, high definition recording and streaming device for professional AV systems. It records MP4, M4A or M4V files of full screen HDMI video channel with mixed audio, and metadata. It also supports live streaming at different resolutions and bitrates from the recording. The StudioStation 100 fits in presentation recording, lecture capture, and enterprise training applications. It is ideal for installation beneath conference tables and in lecterns. A RCP 101 remote control panel can be installed together with the StudioStation 100 to offer record controls and an additional USB storage option.

This guide provides instructions for an experienced installer to set up and operate this streaming media processor. For full installation, configuration, and operation details, see the *StudioStation 100 User Guide*, available at www.extron.com.

Mount the StudioStation 100

The StudioStation 100 is housed in a 1U high, half rack width metal enclosure that can sit on a table with the provided rubber feet or mounted in a rack or under a table. Select a suitable mounting location, then choose an appropriate mounting option. Before connecting the StudioStation 100, turn off all devices that will be connected and then make all external device connections to the StudioStation 100 before applying power to the devices.

Rear Panel Overview

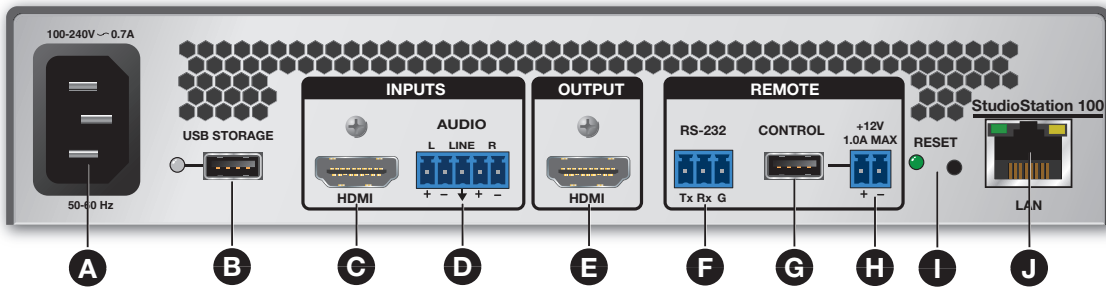


Figure 1. StudioStation 100 Rear Panel

- | | |
|---|--|
| A 100-240 VAC IEC power inlet | F RS-232 port for Simple Instruction Set (SIS™) control |
| B USB type A port for external storage device and activity LED | G USB type A port for remote control panel RCP 101 |
| C HDMI input | H 12V external power output to RCP 101 |
| D Analog stereo audio input | I Reset button and LED |
| E HDMI preview output | J RJ-45 Ethernet LAN port |

Power Connection

- A 100-240 VAC power inlet** – Connect the provided IEC cord. Verify the front panel buttons and LCD illuminate (see **Front Panel Features** on page 3).

NOTE: Make all external device connections to the StudioStation 100 before applying power to the devices.

Control System and External Device Connections

The StudioStation 100 can be configured and controlled from the rear panel RS-232 captive screw port (see figure 1, **F**), the front panel mini USB B Config port (see **figure 3, C** on page 3), or the LAN port (see figure 1, **J**) using SIS commands and DataView. It can also be configured and controlled using a standard web browser from the LAN port (via telnet port 23). Because the LAN port must be connected for streaming output, Extron recommends using it for configuration, control, and firmware upgrades.

- B USB storage device and LED** – Connect an optional external USB storage device to save recorded files. The activity LED indicates the status of the USB port and blinks during recording. The storage device can be any standard external hard drive or USB flash drive formatted with a compatible file system.

NOTE: The StudioStation 100 can detect and record to USB storage devices using FAT32, VFAT long file name extensions, EXT2, EXT3, EXT4 file system, or NTFS-formatted storage volumes.

StudioStation 100 • Setup Guide (Continued)

- F Remote** — To control the StudioStation 100 using SIS commands over RS-232, connect the host RS-232 cable to the rear panel (see the illustration at right) with a 3-pole captive screw connector for bidirectional serial host control (see [figure 1](#) on the previous page).
The default protocol for this port:

- 9600 baud
- no parity
- 8 data bits
- 1 stop bit
- no flow control (handshaking)

- G Remote control port** — Connect the StudioStation 100 with the RCP 101 EU/MK or decorator-style wallplate using a female type A USB connector. The RCP 101 has a USB Storage port, which provides an additional recording location.

- H 12V external power output** — Connect the RCP 101 to the StudioStation 100 using a 2-pin, blue captive screw connector. The 12V power is required to power an RCP 101 remote control.

- I Reset button and LED** — The StudioStation 100 has several reset modes to return user-defined configuration settings or all settings back to factory defaults. The LED blinks to indicate the desired reset mode, and provides the reset status during the reset operation. For information on selecting the reset mode, see the *StudioStation 100 User Guide* at www.extron.com.

- J RJ-45 Ethernet LAN port** — Use a standard Ethernet cable to connect to a network. The table at right has the default network settings.

| | |
|------------------|-----------------|
| IP Address: | 192.168.254.253 |
| Subnet Mask: | 255.255.0.0 |
| Default Gateway: | 0.0.0.0 |
| DHCP: | OFF |



Input Connections

- C HDMI input** — Connect an HDMI (or DVI with a suitable adapter) source device to the input.

- D Analog audio input** — Connect a balanced or unbalanced stereo line level audio device to this 5-pole 3.5 mm captive screw input. Wire the connector as shown in figure 2.

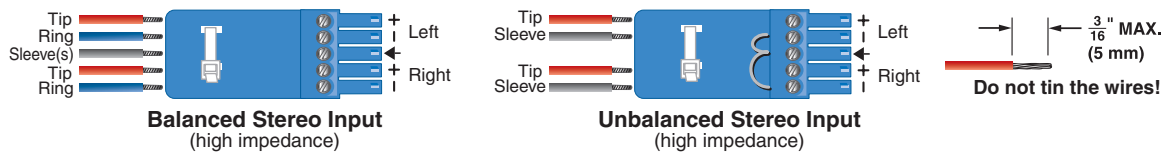


Figure 2. Audio Input Captive Screw Connector Wiring

ATTENTION:

- The length of the exposed wires in the stripping process is important. The ideal length is 3/16 inch (5 mm). If longer, the exposed wires may touch, causing a short circuit between them. If shorter, the wires can be easily pulled out even if tightly fastened by the captive screws.
- La longueur des câbles exposés est primordiale lorsque l'on entreprend de les dénuder. La longueur idéale est de 5 mm (3/16 inches). S'ils sont un peu plus longs, les câbles exposés pourraient se toucher et provoquer un court circuit. S'ils sont un peu plus courts, ils pourraient sortir, même s'ils sont attachés par les vis captives.
- Do not tin the wires. Tinned wires are not as secure in the captive screw connector and could pull out.
- Ne pas étamer les câbles. Les câbles étamés ne sont pas aussi bien fixés dans les connecteurs des à vis captives et pourraient sortir.

Output Connections

- E HDMI preview output** — Connect an HDMI (or DVI with a suitable adapter) display device to this HDMI output (see [figure 1](#) on page 1). The preview output switches between the record preview content and the internal browser using an attached USB keyboard and mouse (optional), which can be connected to either the front panel or rear panel USB ports.

Front Panel Features

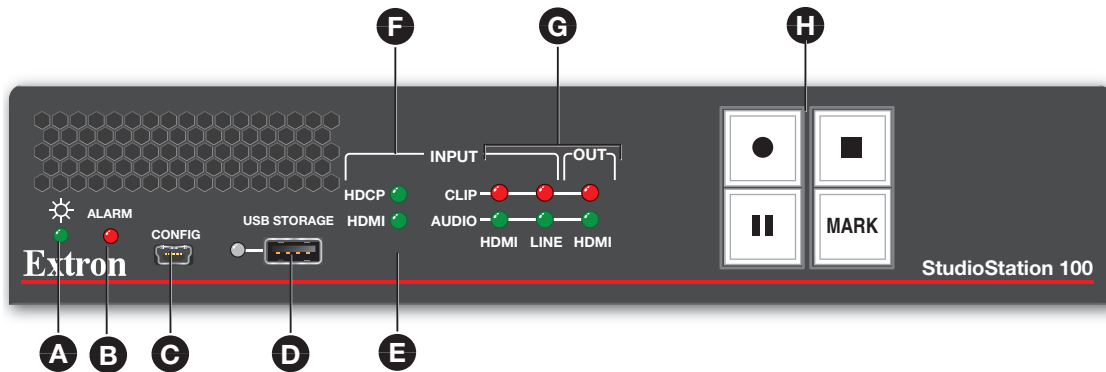


Figure 3. StudioStation 100 Front Panel

A Power LED —

- **Solid Green** — The power is on and the unit is operational.
- **Blinking green** — The power is on but the unit is still booting (not operational).

B Alarm LED — Lights red when one or more alarms are triggered (see the *StudioStation 100 User Guide* for all alarms).

C Config port — Connect a control device to this port with a USB mini-B cable (not supplied). Use this port to send SIS commands to the StudioStation 100 for device configuration and control.

NOTE: For information on using this port for device configuration and control and for a list of available SIS commands, see the *StudioStation 100 User Guide* at www.extron.com.

D USB storage port and activity LED — Connect a USB compatible media device to this port. The LED indicates the USB port status and blinks during both reading and writing. The storage device can be any standard external hard drive or USB flash drive formatted with a compatible file system.

NOTE: The StudioStation 100 can detect and record to USB storage devices using FAT32, VFAT long file name extensions, EXT2, EXT3, EXT4 file system, or NTFS-formatted storage volumes.

E HDMI LED — Lights green when HDMI video input sync is detected.





F HDCP LED — Lights green when HDCP content is detected.

G Audio Signal and Clip LEDs —

- **Audio Input Indicators** – Red (signal clipping) and green (signal present) LEDs for HDMI and line input channels.
- **Audio Output Indicators** – Red (signal clipping) and green (signal present) LEDs for the output channel.

For both the Audio Input and Audio Output indicators, the green signal LED varies in brightness corresponding to the input signal level. It begins to light at – 60 dBFS increasing to full intensity corresponding to signal level increases. When the signal level reaches – 3 dBFS or above, the red clipping LED lights and remains lit as long as the signal remains above – 3 dBFS. When it falls below that level, the red LED remains lit briefly, after which the display resumes real-time monitoring of the signal level.

H Record controls with LED indicators — Record, Stop, Pause, and Mark indicate the current state of record operation:

- **Record** — Press  to record. The red record button lights steadily during active recording.
- **Stop** — Press  to stop the active recording. When pressed during a recording, the green stop button blinks while the recorded file is being finalized, then lights steadily when the file is finalized.
- **Pause** — Press  to pause recording. When pressed, the green **Pause** button blinks to indicate video recording is paused. Press **Record** or press **Pause** to resume recording or **Stop** to halt the recording.
- **Mark** — Press  to place a chapter marker in the recorded file. When pressed during recording, the green **Mark** button blinks momentarily to indicate a chapter marker is inserted. The button also illuminates when JPG thumbnails are automatically created at 5 minute intervals by default.

StudioStation 100 • Setup Guide (Continued)

Powering Up

When power is applied to the unit, the StudioStation 100 undergoes a self-testing sequence. The power LED starts blinking green when the power is connected but the unit is still booting. The green LEDs in the input and output section of the front panel light and the record controls buttons light amber.

To Record a File from the Front Panel

The StudioStation 100 creates MP4, M4A, or M4V media files. Recordings can be stored to the 32 GB SD card internal storage, or to recording media connected to the front, rear, or RCP 101 USB Storage ports. When Secondary Recording is enabled, the recordings can be stored to two locations. The recording location defaults to internal storage, and is the Primary Recording destination in Secondary Recording mode (see the *Web-Based User Interface* section of the *StudioStation 100 User Guide* for more information).

The internal 32 GB SD card is field upgradable to different storage sizes. For instructions to replace the SD card, see the *StudioStation 100 User Guide* at www.extron.com.

To configure an ad hoc recording:

1. Press the front panel **Record** button.
2. Monitor the record time and remaining time on the embedded web page.
3. Press **Pause** to temporarily suspend recording. Press **Pause** again or **Record** to resume the recording and place a chapter marker on the file.
4. Press **Mark** to create a chapter marker and a thumbnail if desired.
5. Press **Stop** to cease recording and place an end-of-file marker on the recording.

To upload a recording to a server share folder:

Files recorded to internal memory can also be uploaded automatically (after the recording completes) to a server (Entwine), or shared folder via FTP, SFTP, or CIFS (see the *StudioStation 100 Help File* for instructions).

Encoder Presets

Encoder presets allow switching between various encoder profiles based on resolution and bitrates. There are 16 encoder presets including eight pre-defined (1 through 8 in the table below) that cover common encoder configurations. Encoder presets can be saved or recalled from the internal webpage (Configuration > Encoding & Metadata > Encoding Presets).

| Preset Number | Preset Name | Resolution | Video Bitrate (Kbps) | Frame Rate (fps) | Audio Bitrate (Kbps) | Mode | GOP Length | H.264 Profile | H.264 Level |
|---------------|-------------|------------|----------------------|------------------|----------------------|------|------------|---------------|-------------|
| 1 | 1080p High | 1920x1080 | 8000 | 30 | 320 | VBR | 30 | High | 4.1 |
| 2 | 1080p Low | 1920x1080 | 6000 | 15 | 128 | CVBR | 30 | Main | 3.1 |
| 3* | 720p High | 1280x720 | 5000 | 30 | 192 | VBR | 30 | High | 3.1 |
| 4 | 720p Low | 1280x720 | 3000 | 15 | 128 | CVBR | 30 | Main | 3.1 |
| 5 | 480p High | 848x480 | 2500 | 30 | 128 | VBR | 30 | High | 3.1 |
| 6 | 480p Low | 848x480 | 1500 | 15 | 80 | CVBR | 30 | Main | 3.1 |
| 7 | VGA High | 1280x1024 | 3500 | 30 | 128 | VBR | 30 | High | 4.1 |
| 8 | VGA Low | 1024x768 | 2500 | 15 | 128 | VBR | 30 | High | 3.1 |

NOTES: *Preset 3 is the default value for recording and streaming.

Streaming

The StudioStation 100 supports simultaneous recording and streaming. Each can have a different resolution, frame rate, and bitrate. The default is Pull, unicast RTP/UDP.

NOTE: A preview stream on the web-based UI is video-only (no audio).

To decode the streams:

To view the preview stream, go to the embedded webpage **AV Controls Panel**. StudioStation 100 streams can also be decoded using an Extron SMD 202 decoder or compatible third party players such as VLC and QuickTime.

Streaming Presets

Streaming presets allow switching between various streaming profiles. There are 16 presets that can be saved or recalled from the internal webpage (Configuration > Encoding & Metadata > Encoding Presets).

Recording Profiles

There are 16 profiles which save metadata and recording file type. They can be saved or recalled from the internal webpage. (Configuration > Encoding & Metadata > Metadata and Recording Profiles).

Access Internal Content

The StudioStation 100 has internal memory reserved for local content. Internal content is viewed from the web-based user interface **Files Management** tab (see the *StudioStation 100 User Guide* or the *StudioStation 100 Help File* at www.extron.com for complete instructions).

Recording folders and files can be transferred directly from the StudioStation 100 to a computer on the same network using an SFTP client such as Filezilla, a free FTP program. Connect to the StudioStation 100 at `sftp://<StudioStation 100 IP>:22022`. Log in using admin or user credentials (see the *StudioStation 100 User Guide* at www.extron.com for more information).

About the Web-based User Interface

The web-based user interface can view, configure, and control the StudioStation 100 with a PC from the LAN port using a standard web browser. This section details how to access the web-based user interface. For more information on using the web-based user interface, see the *StudioStation 100 User Guide* available on the [Extron website](http://www.extron.com) or click the help file button (🔍), in the top right corner, to open the *StudioStation 100 Help File*.

Accessing the Web-based User Interface

The screenshot displays the Extron Electronics web-based user interface. The top navigation bar includes tabs for Device Status, Recorded Events, Configuration, File Management, Troubleshooting, and StudioStation. The user is logged in as 'admin' with a Logout button and a help icon.

The main interface is divided into several sections:

- AV Controls:** Features a Preview window with a video frame, an 'Enable Preview' checkbox, and playback controls (Stop, Play, Mute, MARK). It also shows 'Internal Time Remaining: 00:00:00' and 'USB Time Remaining:'. Below are input selection buttons (HDMI, Digital Audio In, Analog Audio In) and mute controls (Video Mute, Digital Aud Mute, Analog Aud Mute, Mute All).
- Streaming URLs:** Shows 'Streaming URL Unicast: rtsp://192.168.13.1/stream1' and 'Stream URL Multicast: rtsp://192.168.13.1/stream1/multicast'.
- Current Event:** Displays event details for '10/14/2016 10:43 AM PDT', including Title, DB ID (40), Event ID (CP-StudioStation-100-0F-4D-7A_20170413-174316Z), Presenter, and Course.
- Storage Table:** A table showing storage usage for Internal and USB_DISK.
- Input and Output:** Lists settings for HDMI Input (Active), Resolution (1920x1080), Refresh Rate (60Hz), HDCP Encrypt (locked), Record Resolution (1280x720), Record Frame Rate (30), Stream Resolution (1280x720), and Stream Frame Rate (30).
- Stereo Output:** Features two volume meters for Left (L) and Right (R) channels, both set to -17.7 dBFS. An 'Enable Meter' checkbox is checked.
- StudioStations Status:** Shows system status including Remote Panel Connected (RCP 101 Flex55), Power Controller (IPL T PC1), Connection Status (Connected), AC receptacle status (On), and Flip horizontal mode (On).

NOTE: The StudioStation 100 can be accessed in Windows using Microsoft® Internet Explorer® version 10 or higher, Mozilla® Firefox® (version 35 or higher), or Google® Chrome™ (version 37 or higher), and on a Mac® OS® platform (Mac OS X or higher) using Safari® (version 8 or higher) (see the *StudioStation 100 User Guide* for current compatibility).

Open a web browser on the control computer and enter the IP address of the StudioStation 100 into the address bar (the default IP address for example, `http://192.168.254.253`). Press <Enter>. The default user interface page opens to the Device Status page.

The AV Controls panel on the left remains open unless closed by the user. It provides recording controls, input mute settings, and displays an audio output level meter. The Device Status page displays input and stream information, current events, and storage. Click the help file button (?) in the top right corner of the various pages and tabs within the Web-based User Interface to open the *StudioStation 100 Help File* for more information.

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